IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Gary Lee Butler et al.	**Examiner:**	SAVANI, Avinash
Appln. No.:	10/800,142	**Group Art Unit:**	3749
Filing Date:	March 12, 2004	**Confirmation No.:**	6797
Title:	FIREPLACE HYDRONIC HEATING	**Customer No.:**	58506
		Docket No.:	325648

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

I CERTIFY THAT ON Dec. 1, 2009, THIS PAPER IS BEING TRANSMITTED ELECTRONICALLY TO THE U.S. PATENT AND TRADEMARK OFFICE.

Nicci Johnson

SECOND DECLARATION OF DAVID C. LYONS IN SUPPORT OF PATENTABILITY UNDER 37 C.F.R. § 1.132

Dear Sir:

I, David C. Lyons, hereby declare that:

1. I currently reside at 3365 Wild Turkey Lane, Red Wing, Minnesota 55066.

2. I received a Bachelor of Science degree in Manufacturing Engineering from the University of Wisconsin – Stout in 1987.

3. I have over 20 years of experience in manufacturing and research and development engineering. I have been employed in the heating appliance industry for the past sixteen years. Currently, I am Vice President of Research and Development

at Hearth & Home Technologies, Inc. a subsidiary of HNI Technologies, Inc., where I oversee product development of hearth systems.

4. I have been involved in fireplace and heating appliance technology development and am named as an inventor on over thirty patent applications in the field. Additionally, I have personally field-installed over 100 fireplaces, been on numerous service calls to consumers' homes for fireplace and heating appliance issues, and closely followed technological developments in the industry throughout my career.

5. I have reviewed and am familiar with the subject matter set forth and claimed in the above-referenced application, Application No. 10/800,142 ("the Application), including the claims presented with the Response accompanying this affidavit.

6. My knowledge of the industry provides me with an understanding of what those of ordinary skill in the art around the time of invention of the claimed subject matter of the Application would have considered the proper material to use in a hydronic heating application associated with fireplaces and heating appliances.

7. I believe that around the time of invention of the claimed subject matter those of ordinary skill in the art believed that materials having high thermal conductivity, and in particular metals, were the proper materials through which to conduct heat from a heat source to liquid conveyed through conduits in panels. I also believe that those of ordinary skill in the art would not have predicted that more insulative materials, such as those claimed in the Application, would be desirable to use for paneling material that transfers heat from a heat source to liquid contained in conduits in the paneling material.

8. Portions of the Application address panels having a relatively high thermal lag. Materials with relatively high thermal mass (as determined by material

heat capacity and thermal conductivity) have high thermal lags. Materials with high thermal lags have a slower response time, and are less susceptible to abrupt temperature variations. For example, when a relatively cooler liquid enters conduits embedded in a panel formed of a material having insulating properties, the panel is not cooled as quickly, and condensation does not form on the panel. This is to be directly contrasted to the more conductive, metal materials employed by those of ordinary skill in the art around the time of the claimed invention.

9. The reference discussed in the following paragraph supports my understanding that the state of the prior art would have led the ordinary artisan away from the claimed invention around the time of invention thereof.

10. I have reviewed and I am familiar with attached U.S. Patent 4,584,987 ("the '987 Patent"). The '987 Patent relates to fireplaces with heat recovery capability for heating purposes and for heat storage via use of a stamped, sheet metal heat exchanger defining water flow paths for circulating heat exchanging water. The '987 Patent supports my understanding that, at or before the time of invention, the common thinking in the heating appliance industry was that more thermally conductive materials, such as metals, and not materials having insulative properties, should be used for heat exchanger construction where use of heat exchanging water was desired. For example, at the Abstract; column 1, lines 63-64; column 3, lines 41, 42, and 45; column 4, lines 1-6; and column 4, line 30, the '987 Patent specifically describes use of steel sheet metal heat exchanger to convey heat exchanger water.

11. I have reviewed and I am familiar with attached U.S. Patent 5,941,237 ("the '237 Patent"). The '237 Patent supports my understanding that, at or before the time of invention, the common thinking in the heating appliance industry was that more thermally conductive materials, such as metals, and not materials having insulative properties, should be used for heat exchanger construction where heat transfer was of concern. The '237 Patent relates to combustion chambers formed from non-porous cast fiber-reinforced materials. It is my understanding that those of

skill in the art would understand the '237 Patent to actually forward the use of a metal back panel, rather than non-porous cast fiber-reinforced material, for the combustion chamber where heat exchange was of concern, as it would be in a hydronic heating application. My understanding is based at least upon the '237 Patent starting at column 2, line 32; column 3, lines 51-55; and column 4, lines 19-31.

12. I hereby expressly incorporate by reference my statements included in the previously presented "DECLARATION OF DAVID C. LYONS IN SUPPORT OF PATENTABILITY UNDER 37 C.F.R. § 1.132" which was executed April 17, 2008.

13. The foregoing evidence supports my understanding that in heating appliance construction for hydronic heating applications, those of ordinary skill in the art would have been led away from use of materials having insulating properties, ceramic moldable materials, ceramic fiber and binder materials, and the materials having insulating properties described in the Application.

14. I declare that all statements made herein are of my own knowledge and are true and that all statements made on information and belief are believed to be true and, further, that these statements are made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United State Code, and that such willful, false statements may jeopardize the validity of the Application or any patent issuing thereon.

Respectfully submitted,

David C. Lyons

Dated: November 30, 2009